

REMARKS

The Office action mailed on 26 June 2006 (Paper No. 20060617) has been carefully considered.

Claims 21 and 22 are being canceled without prejudice or disclaimer, and claims 10, 12, 20, 50, 55, 59, 66 and 76 are being amended. Thus, claims 7, 10, 12, 20, 29, 48 thru 53, 55, 57 thru 70, 72 thru 74 and 76 are pending in the application.

In paragraph 3 of the Office action, the Examiner rejected claims 51, 57, 58, 60, 63, 68 and 72 are rejected under 35 U.S.C. §102 for alleged anticipation by Nakanishi, Japanese Patent Publication No. 53-91562. In paragraph 13 of the Office action, the Examiner rejected claims 7, 12, 29, 48-50, 52, 53, 61, 62, 64, 65, 67, 69, 70, 73 and 74 under 35 U.S.C. §103 for alleged unpatentability over Nakanishi '562 in view of Saito *et al.*, U.S. Patent No. 6,124,666. In paragraph 38 of the Office action, the Examiner rejected claims 55, 59, 66 and 76 under 35 U.S.C. §103 for alleged unpatentability over Nakanishi '562 in view of Saitoh *et al.*, U.S. Patent No. 6,376,976. In paragraph 42 of the Office action, the Examiner rejected claims 10 and 20 thru 22 under 35 U.S.C. §103 for alleged unpatentability over Nakanishi '562 in view of Saito *et al.* '666, and further in view of Saitoh *et al.* '976. For the reasons stated below, it is submitted that the invention recited in the claims, as now amended, is distinguishable from the prior art cited by the Examiner so as to preclude rejection under 35 U.S.C. §102 and/or §103.

With respect to the rejection under 35 U.S.C. §102 for alleged anticipation by Nakanishi '562, in paragraph 4 on page 2 of the Office action, the Examiner alleged that Nakanishi '562 discloses “a needle-shaped electrically conductive material (4) providing electrically conductive paths disposed throughout the layer of electron-emitting material, the needle-shaped electrically conductive material having a specific resistance not greater than 10^{-1} ohms-centimeter (Abstract)” (quoting from paragraph 4, lines 3-6 on page 2 of the Office action). However, a reading of the English text of the Abstract of Nakanishi '562 fails to disclose any mention or suggestion of a needle-shaped electrically conductive material having a specific resistance not greater than 10^{-1} ohms-centimeter, as claimed in this application. Moreover, a review of a translation of Nakanishi '562, a certified copy of which is submitted herewith, fails to reveal any disclosure or suggestion of a needle-shaped electrically conductive material having a specific resistance not greater than 10^{-1} ohms-centimeter, as claimed in this application.

For the latter reason, it is submitted that the invention recited in independent claim 51 and its associated dependent claims is distinguishable from the prior art cited by the Examiner so as to preclude rejection under 35 U.S.C. §102 or §103. Furthermore, for the same reason, the invention recited in dependent claim 60 (addressed in paragraph 7 of the Office action), and the invention recited in independent claims 63, 68 and 72 (addressed in paragraphs 8, 9 and 10, respectively of the Office action), are distinguishable from the prior

art cited by the Examiner so as to preclude rejection under 35 U.S.C. §102 or §103.

In paragraph 5 on pages 2 and 3 of the Office action, with respect to independent claim 57, the Examiner alleges that Nakanishi '562 discloses a needle-shaped electrically conductive material disposed within the layer and "having a specific resistance less than a specific resistance of the electron-emitting material (Abstract)" (quoting from page 3, lines 1-2 of the Office action). However, a review of the English Abstract of Nakanishi '562 fails to reveal any disclosure or suggestion of the latter feature. That is to say, there is no mention whatsoever in the English Abstract of a "specific resistance", much less "a specific resistance less than a specific resistance of the electron-emitting material", as alleged by the Examiner. Moreover, a review of the certified English translation of Nakanishi '562 enclosed herewith also fails to reveal any disclosure or suggestion of a needle-shaped electrically conductive material having a specific resistance less than a specific resistance of the electron-emitting material. For this reason, it is submitted that the invention recited in independent claim 57 is distinguishable from the prior art cited by the Examiner so as to preclude rejection under 35 U.S.C. §102 or §103.

With respect to the rejections under 35 U.S.C. §103 based on the combination of Nakanishi '562 and Saito *et al.* '666, in paragraph 15 of the Office action, the Examiner admits that Nakanishi '562 fails to disclose a needle-shaped electrically conductive material in a range of 0.01 to 30% by weight based on a total weight of the electron-emitting material

layer. However, in paragraph 16 of the Office action, the Examiner cites Saito *et al.* '666 for allegedly containing such a teaching. It is respectfully submitted that Saito *et al.* '666 does not contain such a teaching.

Specifically, Saito *et al.* '666 discloses (in Figure 1) an electron emissive layer 5 composed of a metal oxide layer 6 and a rare earth metal oxide layer 7. Both of the layers 6 and 7 contain metal material, and thus both of the layers 6 and 7 are made of conductive material.

At column 5, lines 4-10 of Saito *et al.* '666, it is specifically stated that the electron emissive material layer 5 contains "a rare earth metal oxide layer 7 such as scandium scandium oxide, yttrium oxide or europium oxide of 0.01 to 25 weight percent" (quoting from column 5, lines 8-10 of the patent). The same portion of Saito *et al.* '666 makes reference to the fact that the electron emissive material layer 5 contains "an alkaline-earth metal oxide 6 as a main component containing at least barium (Ba), and additionally strontium (Sr) and/or calcium (Ca)" (quoting from column 5, lines 6-8 of Saito *et al.* '666). However, with respect to the alkaline-earth metal oxide 6, no weight percentage is specified. Therefore, since the alkaline-earth metal oxide 6 must be considered to form a certain weight percentage of the electron emissive material layer 5, and since the rare earth metal oxide layer 7 forms a 0.01 to 25 weight percentage of the electron emissive material layer 5, the total weight percentage of the conducting material contained in the electron emissive material layer 5 (that is, the total weight percentage of alkaline-earth metal oxide 6 and rare

earth metal oxide layer 7) must be considered to be considerably higher than the "0.01 to 25 weight percent" attributed to the rare earth metal oxide layer 7 alone. Thus, it is very possible that the total weight percentage of conductive material contained in the electron emissive material layer 5 does not fall within the "0.01 to 30 % by weight" range specified in independent claims 7 and 29. In any event, and more importantly, it cannot be said that Saito *et al.* '666 contains any teaching or suggestion whatsoever of the provision of needle-shaped electrically conductive material having a range of 0.01 to 30 % by weight based on a total weight of the electron-emitting material layer, as recited in independent claims 7 and 29.

For the latter reasons, it is submitted that the invention recited in independent claims 7 and 29, is distinguishable from the prior art cited by the Examiner so as to preclude rejection under 35 U.S.C. §103.

In paragraph 19 of the Office action, the Examiner admits that Nakanishi '562 fails to disclose a needle-shaped electrically conductive material being composed of at least one material selected from a group consisting essentially of indium tin oxide, nickel, magnesium, rhenium, molybdenum, and platinum, as recited in independent claim 12. However, in paragraph 20 of the Office action, the Examiner cites Saito *et al.* '666 as disclosing such an electron-emitting material layer. However, at column 4, lines 9-18 of Saito *et al.* '666 (cited by the Examiner in paragraph 20 of the Office action), the only elements recited in

independent claim 12 and disclosed in the cited portion of Saito *et al.* '666 are magnesium, indium and tin. Accordingly, independent claim 12 has been amended to recite that the electron-emitting material layer includes at least one material selected from a group consisting of nickel, rhenium, molybdenum and platinum. Therefore, it cannot be said that Saito *et al.* '666 discloses or suggests the material or materials forming the electron-emitting material layer recited in amended independent claim 12. Thus, the invention recited in independent claim 12 is distinguishable from the prior art cited by the Examiner so as to preclude rejection under 35 U.S.C. §103.

In paragraph 22 on page 6 of the Office action, in rejecting independent claim 48, the Examiner alleges that Nakanishi '562 discloses a needle-shaped electrically conductive material having a specific resistance not greater than 10^{-1} ohms-centimeters. However, as stated above relative to independent claims 51, 63, 68 and 72 (*see* the comments above relative to paragraphs 4, 8, 9 and 10, respectively, of the Office action), Nakanishi '562 does not disclose or suggest a needle-shaped electrically conductive material having a specific resistance not greater than 10^{-1} ohms-centimeters, as alleged by the Examiner.

In paragraph 23 on page 6 of the Office action, relative to the rejection of independent claim 48, the Examiner admits that Nakanishi '562 does not disclose a needle-shaped conductive material being in a range of 0.01 to 30% by weight of a layer means, but in paragraph 24 on page 7 of the Office action, the Examiner alleges that Saito *et al.* '666

discloses that feature. However, as stated above relative to independent claims 7 and 29 (*see* the comments above relative to paragraph 16 of the Office action), Saito *et al.* '666 does not disclose or suggest provision of a conductive material in a range of 0.01 to 30% by weight based on a total weight of an electron-emitting material layer, as alleged by the Examiner.

For the latter reasons, it is submitted that the invention recited in independent claim 48 is distinguishable from the prior art cited by the Examiner so as to preclude rejection under 35 U.S.C. §103.

In paragraph 27 on page 7 of the Office action, with respect to the rejection of dependent claim 50, the Examiner again alleges that Nakanishi '562 discloses a needle-shaped conductive material selected from a group consisting of carbon, indium tin oxide, nickel, magnesium, rhenium, molybdenum and platinum. However, dependent claim 50 has been amended to recite the needle-shaped conductive material as being selected from a group consisting of nickel, rhenium, molybdenum and platinum. Moreover, as stated above relative to the rejection of independent claim 12, Saito *et al.* '666 does not disclose or suggest an electron-emitting material layer including at least one material selected from a group consisting of the four elements now recited in dependent claim 50. Thus, dependent claim 50 provides a further basis for distinguishing the invention recited in independent claim 48 from the prior art cited by the Examiner.

In paragraphs 31, 33, 34, 36 and 37 on page 8 of the Office action, with regard to the rejections of dependent claims 53, 62, 65, 70 and 74, the Examiner again alleges that Saito *et al.* '666 discloses a conductive material comprising 0.01% to 30% by weight of a layer of electron-emitting material. However, as stated above relative to the rejection of independent claims 7 and 29 (*see* the comments above relative to paragraphs 14-16 of the Office action), Saito *et al.* '666 does not disclose a conductive material comprising 0.01% to 30% by weight of electron-emitting material, as alleged by the Examiner. For this reason, it is submitted that dependent claims 53, 62, 65, 70 and 74 provide a further basis for distinguishing the invention recited in independent claims 51, 57, 63, 68 and 72, respectively, from the prior art cited by the Examiner so as to preclude rejection under 35 U.S.C. §103.

It should be noted that independent claim 20 is being amended to include the recitation from dependent claim 21, which is being canceled. In that regard, in paragraph 47 on page 10 of the Office action, the Examiner alleged (with respect to prior dependent claim 21) that Saito *et al.* '666 discloses a metal layer including at least one material selected from a group consisting of aluminum, tungsten, tantalum, chromium, magnesium, silicon and zirconium. However, in the Abstract of Saito *et al.* '666 (cited by the Examiner in paragraph 47 of the Office action), only nickel and tungsten are mentioned as elements forming the alloy layer 4 of Saito *et al.* '666. Accordingly, in incorporating the recitation of dependent claim 21 into independent claim 20, the element tungsten has been omitted, so that independent claim 20 recites the metal layer as including at least one metal selected from a

group consisting of aluminum, tantalum, chromium, magnesium, silicon and zirconium. For this reason, the invention recited in independent claim 20 is distinguishable from the prior art cited by the Examiner so as to preclude rejection under 35 U.S.C. §103.

In view of the above, it is submitted that the claims of this application are in condition for allowance, and early issuance thereof is solicited. Should any questions remain unresolved, the Examiner is requested to telephone Applicant's attorney.

No fee is incurred by this Amendment.

Respectfully submitted,



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